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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

TAMAI, KARL I

ART UNIT

PAPER NUMBER

2834

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/501,005	Applicant(s) TAKENAKA ET AL.	
	Examiner KARL I.E. TAMAI	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, and 4-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4 is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 5-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The objection to the title is withdrawn.
2. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification, such as spelling errors, for the example the "dive unit" page 27, line 10.

Drawings

3. Figure 16 is objected to because of the following informalities: the space between the separation members is shown as R2 in figure 16, but should be R3 according to the claim 4 and the specification page 27, line 11. Likewise the space R2 should be the space facing the drive unit. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (Hara)(US 6323613) in view of Regnier et al. (US 6236566, supplied by applicant). Hara teaches a drive unit including: an electric motor (Fig. 9, M), a drive unit casing (Fig. 9, #13) accommodating therein the electric motor, and inverter (Fig. 9, U) that controls the electric motor, and a flow passage (as seen in Fig. 6) of a refrigerant that cools the inverter, the drive unit characterized in that the inverter is mounted on the drive unit casing such that a heat sink (Fig. 6, #11) united with a substrate (as seen in Fig. 9) of the inverter defines a space on a portion thereof opposed to the drive unit casing (as seen in Fig. 9), the space is communicated to the flow passage of the refrigerant (as seen in Fig. 6), the heat sink comprises heat-sink side fins extending into the space toward the drive unit casing, separation means (Fig. 9, #12) for preventing thermal conduction is provided in the space. Hara teaches the separation 12 being a thermally insulating material (col. 8, line 33), but it does not explicitly teach both the heat sink fins and the drive unit casing directly contacting the separation means (Fig. 9, appears to teach such an arrangement, but not clearly).

However, Regnier teaches heat sink fins (Fig. 5, #44) directly contacting a separation means (Fig. 5, #46). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fins and separation means of Hara in view of the direct contact as taught by Regnier because optimizes the exchange of heat via the fins by preventing an unwanted flow of water around them (Regnier, Col. 4, Lines 5-11).

With respect to claim 1, Regnier teaches the optimized heat passage V on either formed by cooling fins which taper to a point. It would have been obvious to taper to cooling fins of the heat sink in contact with the drive unit to increase the surface areas in which heat is dissipated to the coolant.

6. Claims 2, 5, 6, 7, and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (Hara)(US 6323613) in view of Regnier et al. (US 6236566, supplied by applicant) and Nishizawa et al. (Nishizawa)(JP 11-155257).

With respect to claim 2, Hara teaches a drive unit including: an electric motor (Fig. 9, M), a drive unit casing (Fig. 9, #13) accommodating therein the electric motor, and inverter (Fig. 9, U) that controls the electric motor, and a flow passage (as seen in Fig. 6) of a refrigerant that cools the inverter, the drive unit characterized in that the inverter is mounted on the drive unit casing such that a heat sink (Fig. 6, #11) united with a substrate (as seen in Fig. 9) of the inverter defines a space on a portion thereof opposed to the drive unit casing (as seen in Fig. 9), the space is communicated to the flow passage of the refrigerant (as seen in Fig. 6), the heat sink comprises heat-sink

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side fins extending into the space toward the drive unit casing, separation means (Fig. 9, #12) for preventing thermal conduction is provided in the space. Hara teaches the separation 12 being a thermally insulating material (col. 8, line 33), but it does not explicitly teach both the heat sink fins and the drive unit casing directly contacting the separation means (Fig. 9, appears to teach such an arrangement, but not clearly). Hara does not teach the separation means positioned between mating surfaces of the inverter casing and the drive unit casing. Nishizawa teaches a heat insulating material between the mating surfaces of the inverter casing and the motor housing to reduce the effect of the inverter heat on the motor.

However, Regnier teaches heat sink fins (Fig. 5, #44) directly contacting a separation means (Fig. 5, #46). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fins and separation means of Hara in view of the direct contact as taught by Regnier because optimizes the exchange of heat via the fins by preventing an unwanted flow of water around them (Regnier, Col. 4, Lines 5-11), and with the heat insulating material between the mating surfaces of the inverter casing and the motor housing to reduce the effect of the inverter heat on the motor, as taught by Nishikawa.

With respect to claim 5, Hara in view of Regnier teaches the drive unit of claim 2, wherein the separation means comprises a laminated (layered) member. The limitation of the separation means being formed by laminating a low thermal conductive member on a separation member is a method limitation given little patentable weight in an apparatus claim.

With respect to claim 6, the drive unit casing including fins 13a extending into the space between the casing 10 and the inverter U.

With respect to claim 7, Hara in view of Regnier teaches the drive unit of claim 2, and Hara teaches that the space is compartmented by the separation means into a first chamber facing toward the heat sink, and a second chamber facing toward the drive unit casing (as seen in Fig. 6).

With respect to claim 9, Hara teaches a separate inverter casing/cover (see figure 9).

With respect to claim 10, Hara teaches the cooling fins (on 11) and 13a forming common flow path (figure 12).

With respect to claim 11, Hara in view of Regnier teaches the drive unit of claim 3, and Hara teaches that the low thermal conductive means is shaped to follow contact portions of the heat-sink side fins and drive-unit-casing side fins (as seen in Fig. 9).

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (Hara)(US 6201365) and Regnier et al. (US 6236566, supplied by applicant) and Nishizawa et al. (Nishizawa)(JP 11-155257), in further view of Suzuki (US 2001/0014029). Hara, Regnier, and Nishikawa teach every aspect of the invention except the separate housing for the inverter. Suzuki teaches that the inverter is received in an inverter casing composed of a member separate from the inverter with a substrate thereof fixed to a bottom wall of the inverter casing and constituting a heat sink, of which a substrate is united with the bottom wall of the inverter casing (as seen

in Fig. 2). It would have been obvious to a person of ordinary skill in the art to construct a separate housing for the inverter, as shown in Suzuki, to provide easy replacement to the inverter.

8. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (Hara)(US 6201365) and Regnier et al. (US 6236566, supplied by applicant) and Nishizawa et al. (Nishizawa)(JP 11-155257), in further view of Baeumel et al. (Baeumel)(US 6198183). Hara, Regnier, and Nishikawa teach every aspect of the invention except the separation means on the mating surface of the inverter casing and the drive unit casing and the side fins and periphery wall of the inverter casing being formed as a unit. Baeumel teaches the cooling fins 42 of the motor control unit and the drive unit motor casing 23 in direct contact with the separation means 7. It would have been obvious to a person of ordinary skill in the art to construct the motor of Hara, Regnier, and Hishizawa with a separation means to provide thermal decoupling of the motor control module and the motor, as taught by Baeumel, and with the drive unit casing and the side fins and periphery wall of the inverter casing being formed as a unit to provide reduced manufacturing costs and because it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. (See *Nerwin v. Erlichman*, 168 USPQ 177, 179).

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9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (Hara)(US 6323613) in view of Baeumel et al. (Baeumel)(US 6198183). Hara teaches a drive unit including: an electric motor (Fig. 9, M), a drive unit casing (Fig. 9, #13) accommodating therein the electric motor, and inverter (Fig. 9, U) that controls the electric motor, and a flow passage (as seen in Fig. 6) of a refrigerant that cools the inverter, the drive unit characterized in that the inverter is mounted on the drive unit casing such that a heat sink (Fig. 6, #11) united with a substrate (as seen in Fig. 9) of the inverter defines a space on a portion thereof opposed to the drive unit casing (as seen in Fig. 9), the space is communicated to the flow passage of the refrigerant (as seen in Fig. 6), the heat sink comprises heat-sink side fins extending into the space toward the drive unit casing, separation means (Fig. 9, #12) for preventing thermal conduction is provided in the space. Hara teaches every aspect of the invention except the heat sink fins and the drive unit casing in contact with a separation means.

Baeumel teaches the cooling fins 42 of the motor control unit and the drive unit motor casing 23 in direct contact with the separation means 7. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Hara with the heat sink fins and the drive unit casing in contact with a separation means to provide thermal decoupling of the motor control module and the motor, as taught by Baeumel.

Double Patenting

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claim 13 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7102260. Although the conflicting claims are not identical, they are not patentably distinct from each other because the low thermal conduction member shaped to follow the contour of the fins would have been an obvious modification to Claim 1 of 7102260 to provide for the passage of the cooling fluid along the drive unit and heat sink fins.

Allowable Subject Matter

12. Claim 4 is allowed.

Response to Arguments

13. Applicant's arguments filed 11/13/2007 have been fully considered but they are not persuasive and/or moot in view of the new ground of rejection. Applicant's argument that line contact of Regnier is irrelevant is not persuasive. Regnier teaches the cooling fins are tapered increases the surface area for dissipating heat to the cooling fluid. The tapered fin decreases to a line contact with the base 46 to keep the fluid flowing between the fins to optimized the heat removal (col. 4, line 9)(literal and clear motivation provide by the reference).

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai whose telephone number is (571) 272 - 2036. The examiner can be normally contacted on Monday through Friday from 8:00 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Darren Schuberg, can be reached at (571) 272 - 2044. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Karl I Tamai/
PRIMARY PATENT EXAMINER

May 1, 2008

